BRAIN TUMOR DETECTION USING CNN

Divyanshu Mayura(2203A51749), B.Joel Pradeep(2203A51719), M.Rishi(2203A51754), MD.Azam(2203A51788), D.Devayani(2203A51626), G.Sanjay(2203A51566)
Under guidance of
Dr.Sriraman Kothuri
Assistant Professor
Dept. of CS & AI

sru

ABSTRACT

A Brain Tumor is an extremely frequent and deadly cancer that, if not caught early, reduces life expectancy. When a Tumor has been diagnosed, classifying the Tumor is a critical step in developing a successful treatment strategy. The major goal of this research is to Tumor the many forms of brain Tumor (cancer) and to determine how they manifest themselves using Artificial Intelligence, Sequential Algorithm, Conventional Neural Network, and Deep Learning. The Human Brain Tumor Image dataset has been trained using four pre-trained models, namely: Glioma Tumor, Meningioma Tumor, Pituitary Tumor, and None Tumor, in order to create this Deep Learning model. The high accuracy of 96% of the research has a favorable impact on early diagnosis before it arises since cancer is currently the most severe disease in the world.

INTRODUCTION

By 2023, around 18,990 Americans will die from brain tumors in the US. However, identifying the disease early can save lives. Deep learning, a technology that uses neural networks, can be used to identify brain tumors and picture recognition. By training deep learning algorithms on large datasets of brain MRI images, clinicians can quickly detect and classify tumors, enabling more precise and effective treatment choices.

RESEARCH STATEMENT

Brain Tumors More than 84,000 people worldwide will be diagnosed with a primary brain tumor in 2021. Only a very few people are able to take their own life and most of them die eventually. In this research, a model has been created using Deep Learning to detect the occurrence of the above-mentioned opportunity. It is able to analyze MRI images and provide the corresponding output.

METHOD
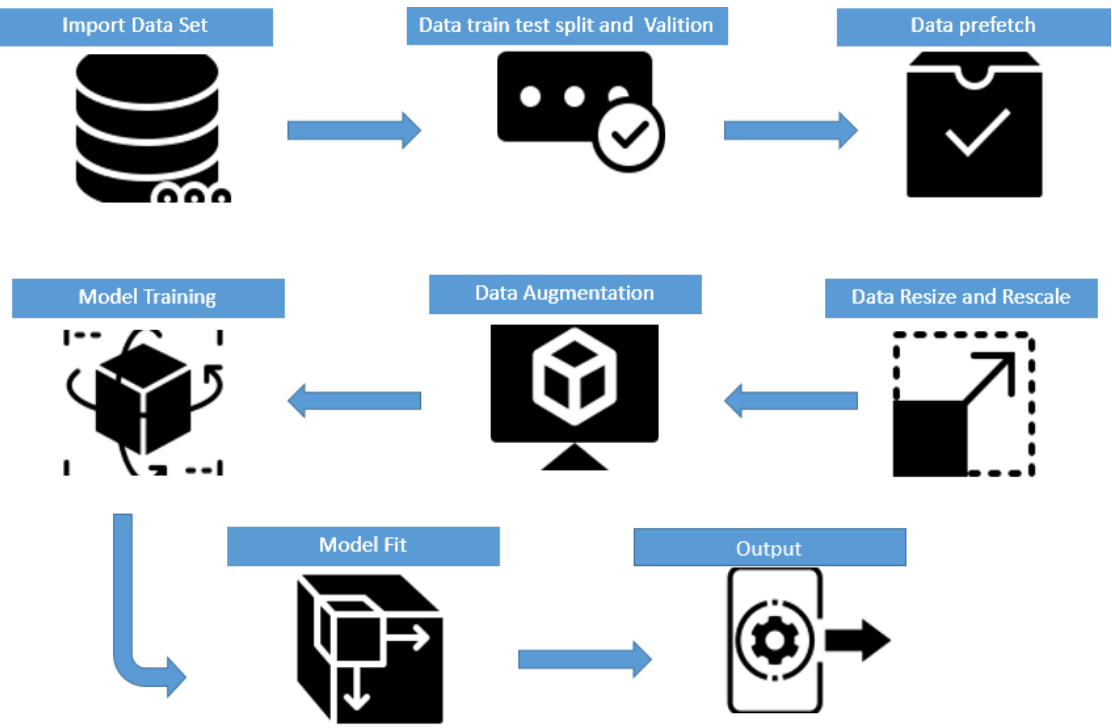
In the above picture, the way this research has been done is presented under several steps. After successfully completing the above steps, the final result of this research has been successfully obtained.
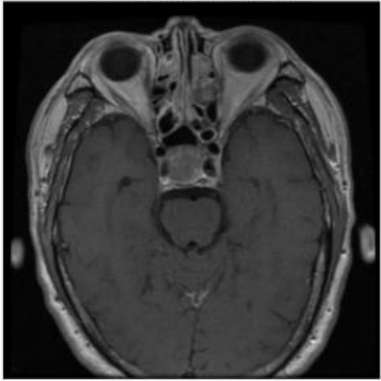
RESULTS

Accuracy and Final Output

Final Output

Acctual Class Name :- pituitary_tumor,
Predict Class Name :- pituitary_tumor,
, Presentage :- 100.0%

Validation and Training Accuracy visualization
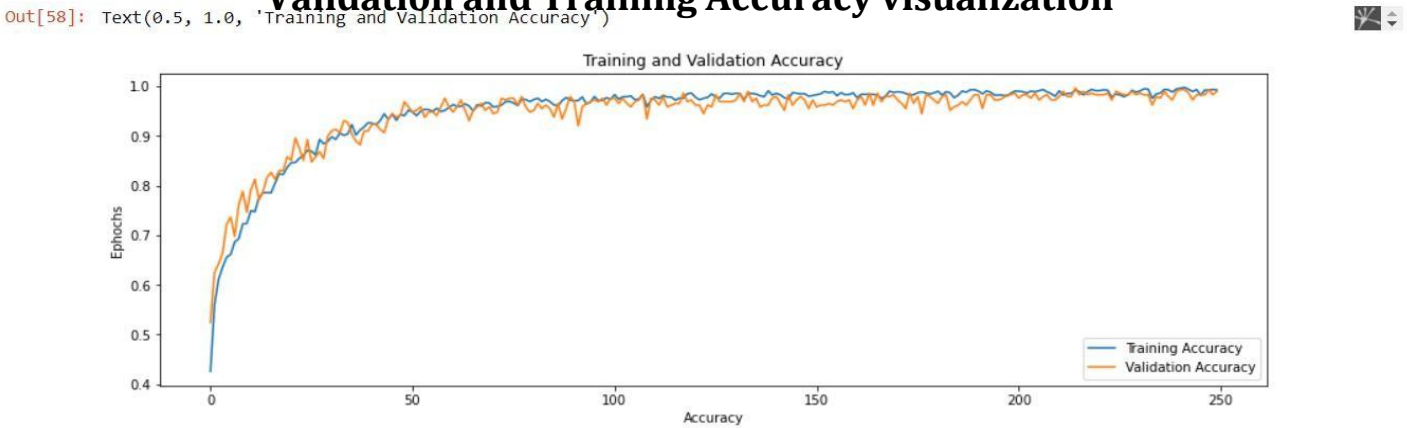
DISCUSSION

As shown in the Result Section, this research was able to achieve a very high accuracy of **0.9631%** as the final result of the research. In addition to this, the loss value of this model is as low as **0.1882%,** which can indicate the quality. The Loss Value shows how many errors there are in the model related to this research, and the lower the value, the less errors there are in this model. It can also be stated that the accuracy is expressed by the accuracy and the higher it is, the higher the accuracy of this model.

The main limitation in carrying out this research is time. The reason for this is that compared to Quantitative Research, Qualitative Research takes some time. Since this research also belongs to the category of Qualitative Research, it took some time compared to the expected time.

CONCLUSION

The primary focus here was to identify Pituitary Tumor, Glioma Tumor, Meningioma Tumor and None Tumors using MRI Scan images. As a first step in this study, we obtained a Brain Tumor images dataset. Then started building a Deep Learning Model using that data set and for that Python Programming Language and Convolutional Neural Network were used. After creating the model, it gives 96% Accuracy as its final result.

As a whole, this research makes diagnosis more efficient and gives significantly better results. The use of such technologies for the future in the health sector will be of great help to both the patients and the doctors and will also be of great help in the development of the health sector.